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PARADOXES IN NATURAL REALISM

THERE is a prevalent philosophic sentiment that the concept of experience called natural realism is hopelessly paradoxical. Now a paradox, in philosophy, is an apparent self-contradiction which, if genuine, would disqualify the theory containing it. Its service is that of reminding us of the duty of consistency. This service, however, is not always beneficial, since it often happens that a mere appearance of contradiction, which might conceivably be removed by careful analysis, is taken as a warning of a philosophical *impasse* and diverts the wayfarer to some other direction ultimately quite as hopeless. What we need to learn in such cases is whether there is involved an affirmation and a denial of precisely the same character in precisely the same fact, for only this is a fundamental inconsistency. Inasmuch as natural realism stands closer to the uncritical "common-sense" view of experience than do other theories, it has a presumptive claim upon criticism; the latter, before it turns to metaphysical interpretations farther removed from the ordinary view, is under obligation to ascertain whether the paradoxes which reflection unmistakably discloses in the realistic statement indicate inevitable self-contradiction.[1]

The special difficulties under consideration here are well introduced by Professor James's observation that "the whole philosophy of perception from Democritus's time downwards has been just one

[1] The easy identification of paradox and contradiction is well illustrated by the following recommendation of "the new realism": "there are no other theories in the field that do not lead either to the paradoxes of subjective idealism or to the still greater paradoxes of psycho-physical dualism and parallelism." Professor Royce observes that "the paradox of this history [of realism] is that while the realistic metaphysic begins as the very voice of common sense, the more developed and thoroughgoing realistic systems show a character which has made realism, from the Sankhya, to Herbart, or to Herbert Spencer, the breeding place of a wholly marvelous race of metaphysical paradoxes" ("The World and the Individual," Vol. I., p. 109). He justly adds, however, that "the mere seeming of paradox is in itself no refutation of a philosophical doctrine" (*l. c.*, p. 132).

long wrangle over the paradox that what is evidently one reality should be in two places at once, both in outer space and in a person's mind."[2] Elaborating the puzzle somewhat, natural realism asserts (1) that the real character of external objects is directly perceived, that their manifold qualities and ways of behavior are to a great extent as they seem to be, and are thus "independent" of knowledge; (2) that cognitive consciousness, which is a peculiarly experienced "stuff or quality of being," has a formal character of "objectivity" or "objectification"; and (3) that this formal objectivity and the real object are both present in, and constitutive of, perceptive cognition. We have here, in the distinction between real object and formal objectivity, a ground of ambiguity and confusion which easily suggests logical inconsistency. The same object, it is critically alleged, is variously located in space, or in time, or in the physical and the mental realms, or partly here and partly there, and this amounts to a virtual affirmation and denial of any definite status. This paradoxical character in the account of perception given by natural realism underlies many a rejection of the latter, sometimes as the object of explicit criticism, oftener as the source of uncritical prejudice. Of the many motives which determine our epistemology it is one.

The important problem thus raised is, then, primarily logical:[3] Assuming the dualistic structure of experience, as described by natural realism, do our various assertions, if carefully understood, contradict each other? More concretely, does natural realism imply that the same object—thing, quality, or relation—is inconsistently located in different departments of reality?

One phase of the difficulty is easily removed. Whatever the precise meaning of our terms when we say that a perceived object is in the physical world and in consciousness, we do not mean that it is in two separate spots in the same real space. The "objective form" of consciousness is not located by natural realism in the brain or in real space at all. The dependence of consciousness upon the nervous system easily generates the misconception that the former is spatially separated from its real object; but, strictly speak-

[2] This JOURNAL, Vol. I., p. 481.

[3] With the more distinctly empirical aspect of the problem, namely, the question whether consciousness, as traditionally defined, really exists, this discussion is not concerned. It is astonishing, however, to note the ease with which a conception resting upon a multitude of supposed empirical facts, gradually organized through centuries of tedious reflection, and possessing a wealth of descriptive terminology, is frequently rejected. The opinion that the traditional matter-mind distinction is an "artifact," and the parentage of illegitimate puzzles, will hardly be established without a more careful account of such experiences as memories, dreams, illusions, ideals, etc., than has yet appeared.

ing, the object is neither outside nor inside the conscious perception in a spatial sense. The confusion of "spatially external to the organism" with "spatially external to consciousness" belongs in the category of those underlying prejudices which warp criticism. It is insufficient to say, against this, that the supposition of a non-spatial consciousness is meaningless. For at this point the question becomes empirical: Do the alleged facts of "consciousness as such" appear in real space? and with this question we are not concerned, any more than with the question "how" can a spaceless state of mind know a spatial fact. The point to be observed here is that the paradox of objectivity as a form of consciousness perceiving a real object does not imply the contradiction of locating that object in two different *places.*

The paradox remains, however, for, although perception and object are not spatially separate, we nevertheless seem to locate the same fact in two orders at once, *i. e.,* in the physical world and in the stream of consciousness. And this, it is declared, is a virtual contradiction. The reply is that if we are careful in our statement we do not identify the perceived fact and the perceiving fact, the object and our perception of it. We do not say or imply that the same bit of reality is both a mental process and a physical fact, unless by "bit of reality" we expressly mean the complete cognitive experience as including both. Reflectively, we explicitly distinguish between the psychical process and the thing perceived. Pragmatically interchangeable the two are indeed; we *use* the thing and our perception of it together, and for the most part need no distinction between them. But if our practise fails in any important particular we promptly acknowledge that our experience had a dualistic structure, as when, for example, in crossing a street at night one steps on an apparent flagstone and finds it a puddle. In such cases reflection instinctively divides the experience into its constituents, the truly known fact and the wrong supposition. Accordingly, if the dualistic statement of experience is reasonably guarded in its terminology against the facile ambiguities of language (*e. g.,* "objective"), it can not rightly be criticized for positing the *same* fact in two orders of reality at once.

It must be acknowledged that the superficial seeming of paradox, as the first fruits of reflection upon dualistic realism, is unavoidable. Just so the hydrostatic paradox retains its oddity in spite of scientific explanation, though this feeling of oddity is understood to be rationally worthless. In our epistemology, if we say that objectivity is a form of consciousness, and that consciousness may even on occasion, or to some extent, "constitute its own objects," it seems superfluous to the degree of actual inconsistency to assert the independent

existence of real objects. Object and objectification, not ordinarily discriminated at all, yet declared radically different in theory, seem paradoxically numerous. The instinct of philosophical parsimony encourages search for some simpler statement. This search, moreover, makes not only for idealism, but also, as frequently appears, for such a modification of realism as will successfully avoid the troublesome dualistic character. The tentative theories called "radical empiricism," "relational realism," "pan-objectivism," and "substitutionalism," all exhibit this motive. Some continue to say that the facts of experience ultimately require the dualistic description, but this is not the point at issue; the latter is the question whether, as is often alleged, the dualistic description is inconsistent. Does the assertion of the independent reality of the object contradict the assertion of the formal objectivity of consciousness? Some specific charges of such inconsistency we have to consider.[4]

A. The use of the phrase "independent of cognition" in characterizing the real object brings to mind a familiar class of criticisms, the prototype of which is ancient.[5] Of these the keenest, as

[4] Some of the criticisms of natural realism find inconsistencies among the various qualities attributed to the independent object rather than between the independence of the object and the forms of cognition. A recent illustration is the argument that "matter is a realm of aspects and these aspects, congenial enough in succession and alternation, will not fit together to form in one total a coherent world. The desk as a light brown total or unit, the desk as a complex combination of drawers and compartments, the desk as a wilderness of woody fiber, the desk, if you will, as a host of ordered molecules or atoms, are different desks, and will in no wise go together. . . . The incompatibility is logical. A continuous polished brown surface *is not* a fibrous or a granulated surface" (Dr. D. S. Miller, in "Essays Philosophical and Psychological," pp. 256, 257). But why must we accept qualitative difference as equivalent to logical incompatibility? And why are two experienced qualities of the "same" object, logically incompatible at the same time, less *logically* incompatible if they occur in succession? Of course to most people any seeming inconsistency, *e. g.*, "smooth" and "granular," only offers a problem for critical qualification and correction.

In this connection I should mention the serious difficulty presented by Professor Strong, namely, that natural realism involves a discrepancy between the real and the apparent temporal location of the object (this JOURNAL, Vol. I., p. 521; "Essays Philosophical and Psychological," pp. 173, 174). I have discussed this point, under the title "The Time Paradox in Perception," in this JOURNAL, Vol. VI., pp. 145–149.

[5] I refer, of course, to the notion that the object is "dependent" on consciousness in that we have no access to it except in perceptual or conceptual experience. The idealistic force of this originally lay in its imputation of paradox to the realistic statement. To exhibit this paradox as an unmistakable contradiction is the conscientious effort of some critics; but usually the contradiction is presumed genuine. Note, for example, Mr. Joachim's insinuation that there is something irreconcilable in saying that "the *same* greenness . . . is *both* in itself and *also* in relation to something else" ("The Nature of

well as one of the most elaborate, is perhaps Professor Royce's discussion of "Independent Beings."[6] Let us observe the line of argument by which the character of independence is resolved into "meaning." After showing that *absolute* independence between object and consciousness is self-contradictory, since it negates the cognitive relation itself, Professor Royce tells us that any assertion of partial or relative independence involves the same *logical* fault. He says: "If the real were wholly independent of knowledge it would be self-contradictory. Well, just so, if *any part* of the reality, if any division of it, if any group of substances or characters in it, were in entire independence of knowledge, or were the same whether known by anybody or not, all our former analyses would apply to just that portion of the universe. . . . If no reality can have entirely independent being, no part of reality can win such being."[7] Now it is decidedly to the advantage of the realist to inquire closely just what this argument proves. A significant feature of it is its implied confusion of "relative independence" with "entire independence of part." But the former is by no means disproved by the logic which demolishes the latter. If it were, we might successfully argue that because it is self-contradictory to say that two things are absolutely alike, therefore we can not say without logical inconsistency that they are partially or relatively alike. But as likeness and unlikeness are real correlative characters, present in widely varying degrees, we may entertain the suspicion that a large measure of relative independence belongs to some realities. This suspicion is reenforced by observing Professor Royce's own conclusions. He continues: "No, the real must be through and through, to its very last quality, to its very inmost *core, such as to be fitted to be known.* . . . Independently of this essential relation to knowledge, being is indefinable. It is there as *that which, if known, is found giving to ideas their validity,* as *that to which ideas ought to correspond,* and as that whose essential relation to ideas is that it is their *model.* . . . To be

Truth," p. 42). On this ground, apparently, one could not say that a book is at the same time a book and a part of a library or the property of its owner. Compare the passage between Professors Strong and McGilvary on this point. "'The realist will surely be kind enough to admit that if we see the independent red, then that red is both in and out of consciousness at the same time.' The realist, even at the risk of seeming unaccommodating, refuses to admit that the real red he is contending for is both in and out of consciousness *at the same time and in the same sense*" (this JOURNAL, Vol. IV., pp. 455, 456). The question whether "to be" means by essential implication "to be experienced," or "to experience," or neither, can not, I suppose, be finally settled by argument, but it is to be hoped that the use of verbal inconsistencies for purposes of philosophic criticism will diminish.

[6] "The World and the Individual," Lecture III., also pp. 195–202.

[7] *Loc. cit.*, p. 201.

real now means, primarily, *to be valid, to be true, to be in essence the standard for ideas.*'' It is to be noted, however, that while these conclusions lead us along a smooth rhetorical road to ''critical rationalism,'' and so toward Professor Royce's magnificent idealism, all that is strictly proved is that the real is essentially ''fitted to be known,'' a proposition with which the natural realist may readily agree. When the subtle transition is made from ''reality'' as ''that to which ideas ought to correspond'' to ''reality'' as the ''model'' for ideas, or from ''that which, if known, is found giving to ideas their validity'' to ''validity'' itself, the ideality of the real is surreptitiously imported into the terms. Strictly speaking, the relative independence of knowledge, attributed to the object by natural realism, remains unresolved into, or displaced by, cognitive relations.

But what is meant by ''relative'' dependence and independence? Certainly nothing esoteric and mysterious. In the kind of fact over which dispute arises relative dependence means simply that the character of being knowable implies knowledge generically, and implies actual knowledge conditionally; *i. e.,* under theoretically conceivable conditions, and only under these, could the fact become known. Properly analyzed, it signifies only that the universe is of such a nature that if certain appropriate changes were to occur, actual cognition of any and every fact would ensue. In this sense all facts are through and through dependent on mind; one aspect of their nature, namely, their ''knowableness'' is correlative with consciousness, and thus qualifies the absolute independence sometimes attributed to them. But such dependence is far from negating all independence whatsoever. As well might we say that because the likeness of two things negates absolute unlikeness, therefore it negates any and all unlikeness. The philosophical process of molding this dependence, or possible objectivity, into ontological idealism is justified neither by analysis of cognition nor by obscurity in the idea of possibility. It must be acknowledged, on the other hand, that the independence of a fact, or its being ''as'' the mind might experience it and whether or not the mind does experience it, is irreducible. But to ask what this ''being'' is, with the presupposition that it is anything but what we find it to be, *i. e.,* in ordinary critical experience, is an initial error. The independence of the real means whatever non-mental character we critically discover in it. The proposition that all ''experienced'' characters *are* ''experience,'' and that facts not experienced by us, *e. g.,* ultra-microscopic and ultra-telescopic facts, must be some experience, remains what it always has been, namely, a philosophic assumption, speculatively proper but neither logically nor empirically intuitive. At least equally sound is the assumption that consciousness is of self and of things which

are not self, that appearances are for the most part realities, and that what we consciously find is found relatively independent of consciousness.[8]

The degree of dependence and independence, *i. e.*, the relative importance of these characters, varies greatly. In the case of undiscovered and unsought facts (a mass in comparison with which human knowledge is infinitesimal) the independence is supreme. Dependent, indeed, such facts are, in the sense of being theoretically knowable; and our very acknowledgment of their reality is, if you please, a vague kind of experience of them. But that such knowableness or such experience impairs the independence attributed to facts by the natural realist is as untrue as the supposed implication of absolute experience is logically fallacious. When, however, facts become necessary to advancing science or useful to civilization, their dependence assumes importance, they are merged in and transcended by experience. The bacillus which is relentlessly sought in uncounted cross sections of tissue is not properly regarded as "essentially" independent of the search; a very real aspect of it is dependent on human purposes.[9] Still other kinds of fact, *e. g.*, ethical and esthetic relations, are well-nigh meaningless except as expressed in terms of consciousness. Something of this varying dependence and independence, which we find in our metaphysical "type phenomena" must be preserved in our final view of reality, and when this is clearly seen the apparent distinction between realism and idealism tends to become blurred.

[8] It is interesting to compare with the idealistic treatment of "independence" Professor Dewey's answer to the question how the reality of past stages of the universe can be assimilated to the pragmatic definition of reality. He says of the remotely past situation, "It is a situation of which, by scientific warrant, it always is to be said that it is on its way to the present situation, that is to 'experience,' and that this way is its own way. . . . So viewed, the question for philosophy reduces itself to this: What is the better index, for philosophy, of reality: its earlier or its later form? The question answers itself: the property or quality of transition-towards, change-in-the-direction-of, which is, to say the least, as objectively real as anything else, *can not* be included in the statement of reality qua earlier, but is only apprehended or realized *in* experience" (this JOURNAL, Vol. III., pp. 253, 255). One may accept this and still believe in the relative independence of the earlier situation, in the sense that this situation was *real*, though scientifically historical experience of it had not yet appeared. One of the very motives which makes the pragmatist disagree with idealism, namely, his sense of the *reality of the part*, points toward acknowledgment of the reality of the ante-conscious parts of the universal process.

[9] One of the classic errors of realism is its supposition that the exclusively "essential" character of reality is independence. This may or may not be so. When a fact is unknown, it is indeed essentially independent of consciousness, but when it is known its dependence is equally essential. The use of the term in any other than this functional sense is apt to prove a philosophic nuisance.

To return to our main theme, the paradox of natural realism which appears in its assertion of both dependence and independence between object and consciousness, is not equivalent to self-contradiction. The kind of dependence, and of independence, are describable in terms which perhaps can not be further simplified, but which are as intelligible as any we possess, and which can not be exhibited as mysterious or inconsistent without (to borrow a phrase from Professor James) "abusing the philosopher's privilege of being puzzle-headed."

B. Paradox appears also in the characters of consciousness called "content," "imagery," "awareness," and "meaning." The difficulty, concisely stated, is that we can not distinguish any "awareness" or "meaning" by itself, and if we identify these with "content," the latter must be admitted as "objective" in a way which either resurrects the "representative theory" or abolishes consciousness altogether. Much recent discussion has turned on this point, the full consideration of which is impossible here since the psychological questions involved are numerous and far-reaching. A tenable position may, however, be stated on the basis of natural realism as follows: "Content," "imagery," "awareness," and "meaning" are different names for the same fact, state, or process of consciousness; no constitutional differences exist corresponding to the variety of terms. "Content" and "imagery" are primarily structural in significance, "awareness" and "meaning" primarily functional. But the fact is the same fact; the "content" *is* the "awareness" and the "meaning." Whether the awareness, in any given case, is correct or illusory, the meaning true or false, is a further question, irrelevant to the one particularly at issue. For our question, it should be remembered, is whether or not consciousness, objective in form and describable both as content and meaning, imagery and awareness, may not consistently be regarded as knowing a real object to which it corresponds. The illusoriness of some apparent awareness does not destroy the genuinness of other awareness; on the other hand it is only in contrast with the latter that the former is "illusory." If we stick persistently to the assertion that "content" is "meaning," and that as such it may know facts to which it psychologically corresponds, the proposition may be paradoxical, but it is not self-contradictory. The difficulties alleged are an elaborate and technical way of stating the objection already considered, *viz.*, that the object is inconsistently located in two orders at once, but it has no superior logical cogency.

A page of correspondence illustrates this point so clearly that it is worth quoting with bracketed comments. A clear-minded friend writes, "You suggest that the quality of the object is identical with

the perceived quality, but is numerically distinct from the perception-quality. My difficulty here is that this states the problem, not the solution. [The natural realist would say rather that this is the best statement of the facts; the "problem" may be artificial, or may be insoluble.] The perception-quality is different from the quality of the object; it is my way of seeing the latter. But the perception-quality is itself object, on this view of consciousness, and so . . . we have the old dualism emerging in a different place, *viz.*, between the object which is perception-quality and the quality of the object. I can't see any essential difference between this dualism and that of Locke. [The trouble here is indeed precisely the same as in the case of Locke's dualism, namely, in the assumption that the perception-quality is itself "object." Locke's theory virtually included two kinds of "object" while officially recognizing only one, *e. g.*, in the definition of knowledge as the perception of agreement and disagreement between *ideas.* If the distinction between real object and formal objectivity is maintained from the start the traditional difficulties disappear. This is half acknowledged in the next sentence.] To be sure, it can be urged that the perception-quality is my way of seeing the quality of the physical object. But the 'how' of it constitutes the difficulty. [Not unless the "how" implies a contradiction.] To my mind the perception-quality will not bear analysis. If the perception is of a blue, it will hardly do to say that the perception-quality signifies a blue perception. [Why not, provided we do not confuse this adjectival use of "blue" with the quality of the sky or silk itself? Again the problem runs back to the primary distinction between the mental and the physical.] And if not that, I can't ascertain what is meant. The consciousness involved has no quality; it is plain awareness and is the same everywhere. Distinctions all belong to objects or contents. How would you get the concept of consciousness to mean more than this, without making consciousness constitute its own object? And of course if we do the latter, we have the original dualism on our hands." [The validity of this dilemma depends upon the implied disjunction: *Either* consciousness is pure awareness *or* it constitutes its own objects. If, however, we admit the distinction between real object and formal objectification, our dualism is not open to the traditional objections. The concept of consciousness would retain all the heterogeneous content which psychology ordinarily attributes to it, and this content could properly be regarded as more or less correctly aware of real objects.]

This matter may be restated in the form of certain suggestions about terminology, suggestions which have force whether or not we are inclined toward natural realism. First, it is certainly desirable

that the use of "content" as identical with "physical fact," or "thing known," should be abandoned. Neither the etymology nor the history of the term unambiguously recommends this usage, and it persistently creates misunderstanding. The word is bound to have a psychical significance, and, if we allow it a physical significance as well, the ambiguity will remain a nuisance. Furthermore, if "content" be regarded as equivalent to known physical fact, "consciousness" tends to become limited simply to "awareness," homogeneous for all cognition. The natural outcome is the view of awareness as "relational" (*i. e.*, between the physical fact and the nervous organism) and thereby we altogether lose "consciousness" in the traditional sense. At present there is insufficient evidence for such a step. "Consciousness as such" with its "content" should be regarded as firmly established in our philosophical vocabulary. Secondly, the use of "object" as denoting a phase, or part, or content of finite consciousness needs to be corrected. To say that the subject-object distinction falls *within* consciousness, if this implies that consciousness creates its objects, is, of course, not universally and unequivocally true, and, as we must acknowledge the distinction between real and spurious objects, we would do wisely to restrict the term to the former. In cases where consciousness is said to "constitute its own objects," *e. g.*, dreams, fancies, memories, and illusions, we should take care, if we retain the term, so to qualify it that it will unambiguously indicate mental facts. In the opinion of the writer, however, this usage of "object" with the exclusively psychical connotation is as unnecessary as it is common. "Projection" would serve every purpose, and its use would avoid a great deal of exasperating ambiguity, as well as the hoary fallacy that the object of consciousness is a state of consciousness. The apparent reality of such "projections" in the moment of experience, *e. g.*, in dreams and illusions, is not sufficient justification for calling them "objects." They can not escape being regarded as "subjective" facts. Thirdly, if this corrected usage were observed, it would be possible psychologically to identify "subject" with consciousness, and to describe conscious subjectivity as psychology empirically describes self-consciousness. Instead of being a "logical presupposition," or the philosophical "rumor of a disappearing soul," the "I" of selfhood could have its unity of facts properly exhibited—for example in the structure and function of "purpose"—and would thereby gain something like scientific status.[10]

[10] No better illustration of the terminological difficulties under which we are laboring could be found than appears in the symposium on "The Nature of Mental Activity" in "The Proceedings of the Aristotelian Society" for 1907–1908. For example, Professor Alexander observes: "Now what makes one thought-process different from another is, I find, nothing but this difference of

C. But even though terms were used in the way here suggested, we would still find ourselves confronted by what is perhaps the most acute form of the paradox, namely, the statement that in part the psychic process of cognition truly knows ("reaches," "grasps," or "reveals") its object, and in part is merely subjective, or, in the terminology indicated above, mere projection. The flood of disagreement with such statement crystallizes in the pointed criticism that we are unable to discriminate introspectively between these two parts of the process, and that to assert a mysterious cognitive power in the percept while we also expressly deny that it is truly cognitive after all, is remarkably like a contradiction. In reply, it may be said, first, that our failure to discriminate at the moment between the true and the false features of the process is not at all a refutation of such a duplex character as shown by reflection. It is utterly unfounded to assume that an immediate criterion of truth and error must exist in the state of consciousness itself. On the other hand, it

mental direction. It is not the object or content of the thought. . . . I have no doubt that the thing called my consciousness exists, and that it is mental activity. But it is not different in quality according as I am conscious of blue, or green, or the sun, or the Pythagorean theorem. . . . All these things are different according as they are color, or figure, or the like, but my consciousness is one and the same thing working only in different directions" (pp. 220, 221). With this compare Professor Read's remark that "Object and subject stand for a distinction within consciousness. . . . To say that the sky is consciousness is a paradox; but to say that the sky as known is not consciousness is a contradiction. Now what is the sky except as it is known? Any object directly known . . . I call either a phenomenon or a representation" (p. 236). "Phenomena and representations, I say, are contents of consciousness" (p. 255). Of course the detachment of these quotations from their context accentuates their uncertainty of meaning, but that the uncertainty is genuinely there is shown only too clearly by Professor Ward's and Professor Stout's criticisms (*e. g.*, p. 244). Natural realism is justified in asserting (1) that the identification of "object" with "psychical phenomenon" inevitably leads to confusion, since linguistic usage inevitably identifies objects with real things which are certainly not psychical phenomena in the familiar psychological use of the term; and (2) the identification of "content" with "real things" can not prevent the surreptitious restoration of "content" to consciousness in the sense of qualitative constituency, since the term has good standing as a psychologically descriptive word.

Professor Taylor deprecates the confusion "caused in philosophical discussion by the unscholarly use of the epistemological term 'object' (which properly signifies 'object of cognition') instead of the more familiar 'thing' to denote the constituent elements of our environment as it is actually experienced in practical life. . . . For practical life the essential character of the environment is not merely that it is 'presented,' but that it interacts with our own purposive activity; it thus consists not of 'objects,' but of 'things'" ("Elements of Metaphysics," p. 45, note). To the writer this confusion seems infinitesimal in comparison with that which the history of philosophy abundantly shows to have followed from efforts to identify "object" with "psychical fact."

is quite as proper to regard truth and falsity as belonging irreducibly to the mental state as it is to accept likeness and difference as irreducible characters of facts. Secondly, there is no contradiction in the statement unless it both affirms and denies truth to belong to the percept in the same part or aspect. This, if we speak precisely, we are careful not to do. Puzzling, indeed, the assertions of natural realism may be, for the facts themselves are puzzling and no theoretical statement can wholly avoid reflecting this character, but self-contradictory they are not.

Natural realism is weak in that it over-emphasizes the perceptive aspects of cognition and fails to do justice to the conceptual, symbolic, functional, purposive, emotional, and volitional aspects. It has a static rather than a dynamic character; it asks "What is the constitution of this experience?" rather than "Why does such a process occur?"[11] It wisely sees, however, that certain acknowledgments about perception are fundamental in a theory of knowledge, and that these are much too easily ignored or slurred over by other theories. Whether it can do justice to the larger aspects of cognitive experience is a far-reaching problem. But in order to preserve its philosophic integrity it need not pretend to be more than a partial account, a foothold for further progress. What it properly asserts is that, as a careful statement of a universal naïve belief, it is empirically satisfactory and logically self-consistent. However commonplace and unesthetic it may be, however unsatisfactory to those who desire the "ultimate meaning of things," in the traditional metaphysical sense, it is not rightly accused of self-contradiction.

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[11] Höffding declares "The static notion of truth must everywhere give way to the dynamic" ("The Problems of Philosophy," p. 84). This antithesis, like so many others in philosophy, seems to imply the mutual exclusiveness and incompatibility of its terms. But is there reason, except in the form of mere verbal suggestion, why truth should not be both static and dynamic? In general, static aspects are as genuine as dynamic aspects, and this is presumably as true in epistemology as in physical science. It is a mistake to suppose that the current tendency to state problems and solutions in dynamic terms escapes the old difficulties. The latter may be temporarily obscured in the fog of new ideas and new terms, but when clearness comes they reappear. It should be regarded as the virtue rather than the vice of realism not to have lost sight of the structural features of cognition.

SOME NEGLECTED PARADOXES OF VISUAL SPACE. I

SEVERAL years ago I was led to ask myself certain questions about the blind spot and the periphery of the visual field. Observations giving at first a most oracular answer, I thumbed psychological literature for more light, but there even less was shining. Some of the questions nobody seems to have faced, while others had been disposed of in a manner indicative of haste, prepossessions, or lack of interest. That these attitudes were unwarranted, a study of the blind spot and peripheral phenomena quickly convinced me. Indeed, unless my observations and those of several persons who have kindly helped me are at fault, they have important bearings upon the theory of continuums and upon one's conception of consciousness. These bearings will be considered in later articles. At present, besides stating the facts about visual space at the blind spot and periphery, I shall try to show but one thing: namely, that the paradoxes here given perceptually are just what one must expect to flow logically from the hypothesis that the space we see is real space itself. If the reader can discern, in his own visual field, the puzzles I am about to recount, he will probably agree that the smoothness with which they fit into a natural-realistic theory of perception is presumptive evidence in favor of the latter.

The campimeter invoked the first question. With this instrument, we were told, the exact shape and size of the visual field (monocular, of course) could be charted. By the usual familiar method I secured a piece of paper with an irregular circle-like line, which was the ungainly contour of the territory my right eye saw. Being sceptically disposed, I tried to see whether the laboratory artist had drawn true to life; but I tried *by looking at the visual field itself.* In all innocence, I reasoned that, as everything I see has some shape and size, and as the visual field is, by definition, the totality of things seen (with one eye) at a given moment, therefore this totality must have a perceptible shape and size, however vague and wavering. This certainly rings true to orthodox logic; so it seemed but a matter of a few weeks' practise before the campimetric shape would, so to speak, become visible to the naked eye. This natural hope was blasted, though, and in its blasting there were laid bare some paradoxes which, for aught I know, have generally escaped notice.

It will not do first to seek the shape of the field by gazing with one eye at a sheet. Even skilled observers who do this often report the field to be visibly circular. Some say they see the curving rim somewhat blacker than the field just within it, while others declare the rim is not black but exists as a mere stopping-place, a sort of geometrical line, of no breadth, but yet somehow perceptible. The

former were easily disposed of. Their black rim proved, by charting, to be the contour of nose and eyebrow seen well within the absolute periphery. When his eye was held in the normal line of vision, such an observer usually confessed that the rim was very hard to see in the temporal arc, where, as it happens, no part of his own face intrudes. The second type of observer proved more difficult; but, as eye movements were generally detected during fixation, the conjecture lay near at hand that the rim "of no visual breadth" meant only the kinesthetic quality of a faint outward circular sweep made in the paradoxical hope of seeing the margin by moving it in a little toward the center of clear vision. A second series of tests showed the truth of this guess. Observers were put in a dark room and spared the difficulty of fixation as well as the confusion of judgment due to the difference in color and sharpness of contour between central and peripheral objects. With the entire field an even black, every verdict agreed that there was no assignable shape, either symmetrical or irregular, clear-cut or hazy. It was not as if the margin were seen through a fog or were itself nebulous. There was no line or band of any sort, no limit at which anybody could say: "Thus far and no farther." I have made the observation hundreds of times and should now word it thus: for me, there is no more *spatial form* here than in a musical chord or a complex odor, but, just as in the chord there is some character which I should naturally call *spatiality*.

Once familiar with this experiment, one may safely resume tests with open eye and investigate my second question, viz., that about the limit of vision at some single point, which is naturally much more easily attended to than the whole fringe. Now let the observer face a white sheet of even illumination and, fixating in the normal line of vision, attend to the outer edge of, say, a black penholder whose tip has been thrust just over into the visual field. I know of no more difficult trick with any sense organ, nor of any which, when once mastered, yields such a peculiar, almost incommunicable, result. There is absolutely no analogy between the disappearance of the penholder and, say, that of a mountain peak into the clouds. However absurd the words sound to the logical ear, it is strictly correct to say that the penholder has absolutely no outer edge, no point which can be seen as the last, none whose next remove is visual nothingness. I am not simply uncertain where the penholder disappears, I am very sure that it is actually "boundless," as genuine and flawless a specimen of τὸ ἄπειρον in real life as Anaximander himself could wish for. Not that I perceive the penholder to go on and on forever; but in another sense, which one must find in his own perceptions in order to understand, and which we shall later investigate, it is extensively indeterminate in a unique manner. What this means, our third problem, the blind spot, will make clearer.

Nobody has made capital of the rather obvious fact that the blind spot is physiologically related to the visual field as the environs of the retina are. Both are insensitive regions organically adjacent to sensitive. The presumption is, then, that one's perception of the limit of vision is essentially the same at the blind spot and at the periphery. So it is, too. Not only do I find the ἄπειρον around the blind spot but, because the retina surrounds the latter, the ἄπειρον here shows more vivid detail than at the periphery. In spite of this, however, psychologists are at odds over the simplest description of the facts and still more fiercely over the interpretation. One group sees the blind spot as a "sehr verwaschener grauer Fleck" in the visual field; another declares it is not an element in the field at all, its region being filled in, as Wundt puts it, through reproduced sensations; and a third, very cautious, agrees with Ebbinghaus that nothing can be said about it, the case being analogous to the instant when we awake from dreamless sleep having no memories with which to fill in the interval and yet being aware that time has passed since we fell asleep. All three opinions state facts, but inexactly. True, if we look at a white field, we may note a diffuse, uncertain effect, which we may tentatively call gray, in the region of the blind spot; but by holding a black thread across the field so as to cut across the blind spot, we find that the gray, so far as it is distinguishable as gray, really fringes the spot itself. Careful attention to it along the path of the guiding thread shows unmistakably that the color is, on the side of the entering optic nerve, absolutely boundless. These words, I know, are absurdly coupled; what is on the side of anything *must,* by the very nature of this lateral relation, have a boundary, protests the logician. But, heedless of this, the paradox adds to its shrieking company a madder one, as soon as we describe the transit of the black thread across the blind spot. The thread disappears on one side of the spot and reappears on the other, *but without a break.* Most emphatically, it is not filled in by Wundt's reproduced sensations; I do not perceive it at all across the blind spot, but am clearly aware that it is invisible there. And yet where it becomes invisible, there is no last visible element.

Ebbinghaus is on the trail of this paradox, but does not quite catch it. His comparison of the blind spot with the "time-blindness" of dreamless sleep certainly suggests but does not precisely depict the situation. In dreamless sleep many organic sensations, too faint or too disorganized to be recalled discretely, doubtless occur, giving us a vague consciousness of lapsed time and so preventing our waking state from joining directly on to the last previous wakeful state, as it does in the case of absolute unconsciousness. The analogue—and Ebbinghaus regards it as nothing better—is unfortunate.

Strictly construed, it would mean either that the visual space elements adjacent to the absolute blind spot sense, in some mysterious way, the presence of an extension which is not itself sensitive; or else that there is in the visual field a genuine hole which vision itself can not fill in but which other varieties of space perception somehow manage to. In the final analysis, this second reading of the analogue simply defers the whole problem, which is that of describing what we actually see; to invoke "reproduced sensations" or auxiliary space-sensing organs is no more helpful here than to appeal to heredity or "local signs" or preestablished harmony. Be the *means* or *causes* of our seeing the visual field as we do what they may, we must still describe the field as it is, would we understand visual space as it is. Only the first sense of the analogue, therefore, claims our attention; but it does not square with facts. No extension is sensed across the blind spot. Near it, I sense extension but no color; and by "no color" I mean "no color," not a phantom gray or any other hazy, will-o'-the-wisp tint, but absolutely no more color or suggestion of color than I sense in a pin prick or a rose's odor. We have provisionally called the effect gray, in deference to custom, but we must now forbid the adjective. It is with respect to color as with peripheral form-perception, whereof Ebbinghaus correctly says, we do not perceive shapes simply in distortion or as through a fog or yet as with inaccurate accommodation, but rather are unable to establish *any* spatial order or even a respectable chaos. And as with color, so finally with extension itself. It does not change its nature near the blind spot or across it; it simply eludes us, as if space itself were slipping from our grasp into some foreign dimension whither no man pursueth.[1]

[1] The paradox of colorless extension is given still more convincingly in the periphery, where, again, the effect is called gray simply because observers assume that, of course, everything one sees *must* have some color. This is not one of the differentiated colors, hence it must be gray—so runs the unconscious logic. The recent studies of peripheral after-images, such as Miss Grace Fernald's (*Psychological Review*, Vol. XV., p. 25), do not conflict with the above observations. They show that after-images appear at the periphery even when the tone of the color stimulus is not seen. By periphery, though, is meant the whole region beyond the paracentral. Thus, if I read the records correctly, an after-image from a red light striking the retina beyond the campimetric red-green zone is considered peripheral; so, too, an after-image from a blue light beyond the blue-yellow zone. I find, however, that the periphery, so defined, has several zones, three of which, in my own case, are easily and always demarcated. At the very rim, color and form are absolutely non-existent, directly or in after-images. In a zone just within this, there is a fluctuation between pure extension and some very uncertain color-form complex. For blue-yellow stimuli, this effect in my own case reaches out very far. The third zone, next to the campimetric blue-yellow field, gives a rather swift fluctuation between fairly clear and vague color-form vision. The paradoxes we are considering

Not long ago, such mysteries would have been dismissed as merely so much more evidence that mental life is neither a piece nor a picture of the physical world order, but an ideal island whence the marooned ego can not even signal to the mainland of reality. Today the wish is abroad to explain their like in a thoroughly realistic way, not to substitute one big obscurity for a dozen little ones. The attempt has not yet been made, I believe; all psychology, even the most materialistic, still speaks the language of idealism, or at least a dialect of it. But a beginning must be made, if psychology is to take its proper rank as a natural science. Now, it is not enough to borrow the methods of realistic research, the subject-matter itself must be realistically interpreted; and not for the sake of proving some realists's philosophy, but in the hope that, from the new point of view, some of the old spectres of psychology will be seen to be but mist.

Suppose we begin by accepting, as a working hypothesis, the natural belief that what is made immediately present to us through the assistance of the retina is real space, not a mere "sign" or "ideal correspondent" of a hypothetical outside space. It would at once follow that the elements of the visual field are not *in* space, for the excellent reason that they *are* space. Obviously, there is no possible sense in saying that a real space is itself in a realler one; one might as well say that a real blue is in a more general blue. Such perversions of the preposition "in" shoot through all philosophical literature, and a generation schooled in them will naturally cry heresy at the above inference. Could there be a more monstrous paradoxical insult to common sense than this allegation that a part of space is not contained in its whole? This misses the point, though. We wish to know just what we mean by "part" and "whole" and "containing," when speaking about extensions. For instance, have we to do here with a receptacle and its contents, or with a cake and a crumb of it, or with a thing and one of its qualities, or with a class and its members (a concept and its individual, differentiated cases)? Certainly, the natural realistic view is not that a real extension is, *as extension,* somehow tucked away in a bigger extension, as a barrel might be in a ship's hold. Mr. Bertrand Russell's distinction between "externality" and "spatial order" is one the ordinary man would insist upon, were he criticized for speaking of things as being "in" space. He means that the things themselves are qualified extensions and that, as extensions, they are related to one another in

have to do with the Ultima Thule of the periphery. To admit their existence here is, by the way, not equivalent to denying that under certain unusual conditions even the ultra-peripheral zone may sense color, at least in after-images. No less than logic, the astonishing adaptive powers of the retina warn us against such an inference.

a manner he describes as position or order. Extension, then, is a quality of some things—most conspicuously of visible things. I know this naïve description will provoke many a learned smile on lips ready to prove space an *a priori* form or a continuum of some mathematical-geometrical sort. But suppose we run, in a spirit of adventure if with no better grace, to the last implications of the innocently radical view. We find them straightening out all our paradoxes and thereby furnishing some little empirical evidence in favor of the realism on which the opinion is founded.

Those who consider visual areas as "in" or "projected into" an external physical area will pronounce our boundless and formless field as an illusion due to inaccurate language, feeble attention, or defective indirect vision. Those who treat each sensed extension as a real cosmic quality, rather than a "sign" or "mental state," must follow us to the point of saying that, even with a divinely perfect organ of vision and imperturable attention, every visual field must be visually boundless and formless because boundaries and forms, to be seen, must be "lines" of difference between seen things. For vision, there can never be anything outside the visual field, inasmuch as the latter is, *by definition,* the totality of characters seen at a given moment. This means that *visually* there is no outside to a visual field, hence no possibility of visual bounds to the latter. A visible boundary between the visible and the invisible is even more absurd than, say, an audible boundary (*i. e.,* an audible difference) between colors and sounds, or, better yet, a felt boundary between feeling and anesthesia. What, then, is the nature of the outermost visual elements? *They must be, in logic, pure extension without spatial order. And this we find them to be in reality.* "Something stretches out" at the periphery, but it is utterly amorphous; so, too, around the blind spot where not even the more highly developed color sensitivity and form-synthesis of adjacent retinal elements can give hue or shape to the "jumping-off place."[2] The extreme homogeneity of these regions is their one striking, baffling character; our inability to "say anything about them,"

[2] Here, to be sure, the zone of pure extension is very much narrower than at the periphery because the retina has developed from its center outward, and also, it may be, because the rods and cones are distributed with a convex front around the blind spot but concavely at the periphery. This second point owes what plausibility it may enjoy to the hypothesis that spatial order depends, in some measure, upon the number of lines that are determined by two rods or cones on opposite sides of the rod or cone whose visual space-order is being measured. The geometry of this assumption, as well as its factual warrant, can not be sketched here. As for the first point, can histology and experimental psychology, between themselves, show any genetic correlation between perceptions of extension, form, and color, and the development of the three major strata of the retina? If so, some radical amendments to current theory would follow.

of which Ebbinghaus complains, is the inevitable result of this, for *here we have to do with a single quality, namely extension, attached to no other, inhering in no object,* hence removed from the ordinary judgment which demands a subject and a predicate (a complex and an inhering or otherwise attached character). Strictly, we can not even say "something stretches out," but only "there is a stretching out."

Suppose, now, we ask our naturally minded friends whether extension and quantity are identical. The answer, I think, will be pretty uniformly negative. Knowing nothing about the interminable wars of geometers and logicians over the preciser definition of these two concepts, an acute but unphilosophical person is disposed to say that, whatever each may be, one is not the other, inasmuch as we can inquire into the quantity of unextended things, such as geometrical points, pure number, complexity, time, happiness, etc. However intimately, therefore, extension and quantity are related, they are distinct and neither is reducible to the other. As a strong band of authorities is ready to defend this natural opinion, we need not be ashamed to follow it in its superficially bewildering implications, the first of which is that, if we can perceive pure extension, divorced from every other character, we shall perceive it as quantitatively indeterminate. And this means neither of uncertain quantity nor of zero quantity (*i. e.*, a visual point), but completely unamenable to the very category of quantity. With one slight qualification, this describes what I find at the blind spot and the periphery. Here is just such a genuine ἄπειρον in its pure state save for a certain positional value which it has; I see it to the right or to the left of objects in the clear field. But we know, by observation and by reasoning, that mere position does not bring our ἄπειρον under the category of quantity. It is well known that movements can be sensed in the periphery where shapes can not.[3] Far from being the paradox some psychologists would make it, though, it only confirms what everybody believes at first thought, namely, that position is not a "dependent phase" of extension or of quantity in the real world and hence need not be in the mental. Pure points have position;

[3] Note that this is not Exner's statement, which Professor Stratton has brought under suspicion (cf. his "Visible Motion and the Space Threshold," *Psychological Review,* Vol. IX., pp. 433 f.). That statement is that motion may be perceived independently of all discrimination of positions. Neither the truth nor falsity of this affects in the least my observation that two extensions, each a boundless and formless character, can be distinguished as to position without their developing thereby any perceptible boundary between them. The paradox of motion in no (assignable) direction (first noticed in tactual space, I believe, by Hall and Donaldson) is so easily fitted into our naturalistic scheme, that we shall not consider it.

indeed, some geometers define them as being nothing save position, hence as constituting a relational order intimately connected with extension and quantity, but wholly distinct from these. Ere this, somebody has been itching to ask: "What of the continuity of visual space, and generally of real space, if all this is true?" The answer is our next duty.

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REVIEWS AND ABSTRACTS OF LITERATURE

The Moral Economy. RALPH BARTON PERRY. New York: Charles Scribner's Sons. 1909. Pp. xvi + 267. $1.25.

Professor Perry's little book is notable out of proportion to its size and pretensions. It is the most recent expression of the new spirit in ethics, which aims to get away from historic concepts and controversies back to the facts themselves of the moral life. Bishop Butler's saying is aptly taken as the motto of the book: "Things and actions are what they are, and the consequences of them will be what they will be; why then should we desire to be deceived?" The author's aim throughout is to exhibit morality as neither "a mystery nor a convention, but simply an observance of the laws of provident living," a rational meeting of the facts of life. For him, as for Socrates and the Greeks, moral conduct is enlightened conduct, the good man is the wise man. It is this naturalness and sanity of morality which he is concerned to emphasize in contrast to the Nietzschean view of it as artificial and restrictive, and this purpose he carries out with a singular simplicity and clearness of style and with a wealth of literary allusion which makes the book remarkable as an attractive and persuasive treatment of ethics. Although the work is called in some advertisements of it a text-book, the classification is hardly fitting, lacking as it does all the necessary machinery of paragraphing and bibliography: it is rather "a preliminary sketch of a system of ethics" adapted to all whom recent literature or social change has interested in the problem of rational living.

The topics discussed are essentially those of the usual text-book, though disguised under terms appropriate to the style of treatment: "Morality as the Organization of Life," "The Logic of the Moral Appeal," "The Order of Virtue," "The Moral Test of Progress," "Moral Criticism of Fine Art," "The Moral Justification of Religion." The author's standpoint might, perhaps, be characterized as that of naturalistic idealism or Græco-scientific idealism, combining as it does the Greek conception of morality as the natural flower of human life with the modern evolutionary account of its origin and process. Starting with the conception of the unit of life as the simple interest, or self-maintaining process, the condition for the moral life is found in the multiplication of interests which makes necessary their organization or economy. Goodness is relative to interest and consists in the satisfaction of the process or in the means

thereto. Moral goodness or virtue consists in "the fulfillment of an organization of interests." "Morality is only the method of carrying on the affair of life beyond a certain point of complexity," it is "the massing of interests against a reluctant cosmos." "Morality in its springs is absolutely one with that clinging to life which is the most deep-lying of all interests, and with that relish for life in which its goodness needs no philosopher's approval." The success of the author's exposition of the naturalness of the moral life is beyond doubt, but one may well question if he has not, in his zeal, lost sight of its morality. Throughout the whole of his chapter on the nature of goodness one looks in vain for any suggestion of the essential place of the personal attitude in morality: a machine might be a saint were it only complex enough in its reactions.

The same over-statement of naturalism is found in the chapter on obligation in spite of the great excellence of much of the treatment. The individual seeks the satisfaction of his interests, or the good. These interests are not desires for pleasure, but for objects as diverse as human natures are different. The rational, or moral, individual seeks to satisfy the greatest number of these interests without reference to whether they are now felt by him or are only potential, those of his wider vision either of himself or others. From the point of view of reason, our neighbor's interests are as important as our own future or present ones, the sole consideration being the conservation of the greatest number of interests without distinction of quality. For the author, as for Bentham, pushpin is as good as poetry save in so far as the cultivation of poetry may be a more inclusive aim which includes pushpin and adds other goods as well. The simple interest is an absolute unit and moral deliberation is only a problem in arithmetic, every interest to count for one and none for more than one. Apple pie is better than apples because it satisfies the desire for apples and also for crust, contains more of some simple unit of goodness than do its simpler constituents. In spite of his protest against abstractions one feels that Professor Perry has ventured far into hypothetical psychology in his reduction of moral choice to a calculation of the number of simple units of goodness contained in an act, especially in view of his recognition of the qualitative diversity of those interests, the satisfaction of any one of which constitutes a unit of goodness. A course of conduct which is chosen in view of several more or less conflicting interests and which may be said to conserve them as far as possible, is not merely the sum of those simpler actions, nor is the goodness of the complex act merely the sum of the goodness of the so-called constituents. The statement that *more* goodness is realized in the act adds nothing to the statement that this act is deliberately chosen. The use of the quantitative formula renders ethics no more exact as a science and serves rather to confuse its methods.

The justification of altruism could not be better stated than in the author's discussion of the objective validity of interests, in which he distinguishes between *prudence* as the far-sighted satisfaction of a given interest and *moral purpose* as the adoption of interests for their own sake. It is the familiar Kantian distinction, but it is expressed with remarkable

simplicity and force. Not so clear or convincing, however, is the discussion of the virtues, upon his classification of which, it is true, the author does not wish us to lay too much stress. But surely it is confusing to identify materialism with "the undue assertion of the present interest" and formalism with "the improvident exaggeration of ulterior motives," as well as to make the distinction between the material and formal aspects of morality coincide with that between a regard for a nearer and a more remote good. It is apparently the same naturalistic tendency to ignore the subjective or personal factor that finds expression in the assertion that "in terms of intelligence and incapacity, the basal excellence and the basal fault, it is possible to define the whole affair of which morality is the constructive phase." And again, "manufacturing, transportation, and banking, when conducted on a large scale, touch life at so many points, that he who seeks to gain power or wealth by means of them will gradually and without any abrupt change of motive approximate the method of disinterested service." This is truly an application of the quantitative measure of goodness which should be comforting in this age of large undertakings. The distinction of good and bad is only one of more or less.

In the last two chapters on art and religion the idealistic note predominates. Two quotations must suffice as expressive of the author's position. "It will have become plain that while art is the natural and powerful ally of morality, it does not itself provide any guarantee of proper control; in the interests of goodness, no man can surrender himself to it utterly. Goodness can not be cast upon a man like a spell; it is a work of rational organization, and can not be had without discipline, efficiency, and service." Religion in its highest phase is identified with moral idealism. "This idealism establishes itself upon an unequivocal acceptance of moral truth. It calls good good and evil evil, with all the finality which attaches to the human experience of these things, leaving no room for compromise. Its faith lies in the expectation that the world shall become good through the elimination of evil; it manifests itself in the resolution to hasten that time. . . . Life is not a spiritual exercise the results of which are discounted in advance; but is actually creative, fashioning and perfecting a good that has never been."

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Les Systèmes logiques et la logistique. C. LUCAS DE PESLOÜAN. Paris: Marcel Rivière. 1909. Pp. 416.

M. de Pesloüan does not like logistic, but he does like Pascal, and so he becomes a critic of logistic in the spirit of Pascal, half admitting "it is not shocking for the reasons found afterward, but the reasons are found only because it is shocking." The first expression of this dislike was four letters published in the *Revue de Philosophie* for 1908, of which the first three were reviewed in this JOURNAL (Vol. V., pp. 21–23). The fourth deals with the confusions into which logisticians have fallen as a result of the Cantorian paradoxes; their willingness to dispense with the principle of contradiction, the concept of class, etc., and concludes with a criticism of

logistic's claim to practical utility. To these letters which form the nucleus of the book (pp. 122–277) is added a preface (pp. 1–121), and an appendix (pp. 288–413).

The preface is non-technical and of absorbing interest from the point of view of both style and content, for the author has much humanity of thought and brilliancy of expression. There is, first, an investigation of the claims of mathematics on our attention. This claim lies in its *art, i. e.,* its perfection in form and in power of communicating thought, but this is rooted in our feeling for precision, which is, unconsciously, the inspiration of all mathematical creation. Logistic has nothing to do with intuition or feeling, and can, therefore, be nothing but repulsive to M. de Pesloüan. Its substitution of basal laws and imageless thought destroys the liberty which mathematics has always enjoyed as a birthright and is "an action of the police: M. Couturat being the prefect."

The right of criticism to break into the mathematical field comes from the need of mathematicians to extend their opinions beyond the realm of mere facts. All such extensions are metaphysical (p. 17), and the tacit recognition of the entrance of mathematics into the field of metaphysics appears in the substitution of *hypotheses* for *axioms.*

Logistic can lead to no great discoveries, as logistic, for intuition is the chief factor in discovery. The limitation of its rôle is, in so far forth, absurd. Logistic is not even valuable as a critical method, for it substitutes mechanical parts for the organs of a living being and expects to make the patient live (cf. pp. 72–73). The name *logistic* itself is not a *resurrection,* but a *surrection,* for it is an almost wholly disused word revived in an entirely new and useless meaning: "Now the true word is found; we ought to believe it will be universally adopted; then there will be logistical politics, logistical socialism, logistical economics, logistical history, logistical languages, as we have logistic itself. . . ."

"Provided that God lends it life."

The fundamental postulate on which the claim of logistic rests, our author thinks, is that at a certain point in our knowledge we can throw away all experience and all previous knowledge, substitute a set of postulates, and recreate rationally a system of knowledge which shall exactly agree with previous knowledge (p. 93). This is what is essentially shocking to him and is what he repudiates. There is a splendid description of the logistician's attempts to reject criticism by retreating behind the character of logistic as a language which can only be criticized in terms of itself, *i. e.,* by more logistic (p. 95), and the chapter closes with an example from M. Tannery of a logical construction of mathematics which satisfies that "taste for precision and evidence" which is "the life of logic" (pp. 114–115), but which is not logistic.

The appendices are more technical, for the most part expositions and citations of the works of such men as Du Bois Reymond, Robin, Fourrier, and Weierstrass, and furnish a deeper empirical basis that justifies the more light-spirited criticism which without them might seem flippant and unconvincing.

The postulate taken as the basis of logistic places it as an adherent

of a monistic and deterministic philosophy and, as such, it should commend itself to certain philosophers. Also it seems as if our author had been a little violent against logistic as a critical device. That science should ultimately rest in a logistical form seems improbable and highly undesirable, but that scientists should occasionally try to regard their present achievements as done into deductive form for critical clearing up and self-examination is not the same thing, and seems to the reviewer, desirable. As a special and untranslatable language, it would be hard to make out any case for logistic. Sets of substitutive symbols, like those of mathematics, are practically limited in value to situations having but a small finite number of essentially different and clearly definable entities and relations, and inasmuch as most sciences are not of this nature, it is doubtful whether the use of logistical symbolism could be widespread, and unless it be simplified beyond the recent utterances of the *Formulaire* and of Mr. Russell,

"May God not lend it life"—even in mathematics!

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Nursing the Insane. CLARA BARRUS, M.D. New York: The Macmillan Co. 1908. Pp. 409.

To those who know from experience how difficult it is to make a complex subject clear to the average mind, Dr. Barrus will seem to have accomplished a work of excellence. Her book, which started as a collection of familiar talks to nurses in charge of mental invalids, is the outgrowth of fifteen years's experience in a large hospital for the insane. Its aim is to furnish special instruction and suggestions to students engaged in caring for the insane, to help new workers to a right beginning, and to aid the more experienced ones to greater efficiency. It is truly a most pleasing commentary upon the present state and aims of mental medicine to find a book of this description issuing from the press with the imprimatur of a great hospital for the insane. Not so many years ago our hospitals for the insane were places for the mere detention and custody of their inmates. To-day all this is changed; and not the least important factor in the general advance has been, and is, a greater care and skill in nursing.

Within the twenty-six chapters of her book, the author has given a large amount of information which every good nurse should, in some manner and degree, possess. There are practical talks upon the reception of patients, the hygiene of the wards and of hospital departments, the care of bed patients, bathing and hydrotherapy, the preparation and serving of food, accidents and emergencies, the occupation and amusement of patients, the power of habit, applied psychology, mental hygiene, and several others. Each of these topics is discussed with sufficient fullness for all practical purposes and in such fashion as to render even the description of a wet pack not uninteresting.

It has always been the opinion of the reviewer that a book on nursing should be written by a woman; and since reading Dr. Barrus's volume he

ventures to think that this opinion needs no defence. Her mind is distinctly feminine in the best sense. Here and there one comes across such agreeable bits of writing as this: "Be on the alert for fresh arrivals in the birds, catch their first calls in the spring, attend to the brown earth as it begins to be pierced with all manner of green things that unfold from day to day, let your glances flit about with the butterflies that hover near, learn to be stirred by the promise of awakening spring, exult in the radiance and beauty of summer, bask in the mellow fulfillment of autumn, and respond with briskness and vigor to the challenging forces of winter, and so become at one with nature in all her changing aspects. When you are yourselves alive to these things, you can not help making your patients keenly aware of them also, and you will put your wits to work to see what each walk can bring of pleasure and stimulation to your patients." "Curious words for a book on nursing!" some may say. Perhaps. But for us they contain the notes of sincerity, and of high seriousness, without which no nurse can be wholly worthy of her calling. A nurse who cultivates such a spirit can not go very far wrong in her treatment of the insane, and for this reason, if for no other, we can not too heartily commend Dr. Barrus's book to the attention of those for whom it was written.

JOHN E. DONLEY.

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JOURNALS AND NEW BOOKS

ZEITSCHRIFT FÜR PSYCHOLOGIE. September, 1909. *Über das Zusammenwirken verschiedenen Sinnesgebiete bei Gedächtnisleistungen* (pp. 257–360): ALFRED VON SYBEL. – An extended experimental investigation of memory type, speed of reading, individual differences in methods of learning, and the cooperation of visual, auditory, and kinesthetic sensations, with respect to economy and retentiveness in memorizing nonsense syllables and poetry. Discussion of literature and detailed summary. *Über die bei Durchgangsbeobachtungen auftretende Denzimalgleichung* (pp. 361–367): F. M. URBAN. – The different frequencies of various numerals in long series of passage observations in astronomy arise from constant errors which appear in laboratory experiments on the estimation of intervals and in the complication experiment. They also confirm the location of the "indifference point" at 0.6 second. *Reviews:* Moskiewicz, *Einführung in die Psychologie:* A. DYROFF. Polowzow, *Kausalgesetz und Erfahrung:* PH. FRANK. V. Aster, *The Physical Basis of Mind:* CHAS. MERCIER. Autoreferat, *Weiter Mitteilungen über Neurobiotaxis:* C. U. ARIËNS KAPPERS. E. Laqueur, *Lehrbuch der Physiologie des Menschen:* R. TIGERSTEDT. Giessler, *Bijdrage tot de kennis der Rechts—en Linkshaudigkeit van de onderste ledematen:* M. C. SCHUYTEN. Nagel, *Über den Bau und die Bedeutung der Area centralis des Menschen:* G. FRITSCH. Max Meyer, *The Hearing of Primitive Peoples:* F. G. BRUNER. Laqueur, *Zur Physiologie der Cortischen Membran:* A. KREIDL U. J. YANOSE. Max Meyer, *Combination Tones and Other Related Auditory Phenomena:* J. PETERSON. Voss, *Über*

die Einfluss von Audsrucksbewegungen auf das Electrolytische Potential und die Leitfähigkeit der Menschlichen Haut: A. KNAUER. Dürr, *Über den Austieg der Druckemfindung:* G. F. ARPS. Laqueur, *Zur Deutung der nach Exstirpation des Ohrlabyrinthes auftretenden Störungen:* W. TRENDELENBURG. Laqueur, *Vergleichende Untersuchungen zur Physiologie des Ohrlabyrinthes der Reptilien:* W. TRENDELENBURG U. A. KÜHN. Aall, *Uppmärksamhetrus Problem inom den Nyare psykologien:* B. HAMMER. Dürr, *Untersuchungen über den Verlauf der Aufmerksamkeit bei einfachen und mehrfachen Riezen:* O. KLEMM. Dürr, *Der Verlauf der Aufmerksamkeit bei Rhythmischen Reizen:* G. F. ARPS U. O. KLEMM. Katz, *Das Gedächtnis:* TH. ZIEHEN. Kastil, *Untersuchungen zum Problem der Evidenz der Inneren Wahrnehmung:* H. BERGMANN. Bobertag, *Le développement de l'intelligence chez les enfants:* A. BINET ET TH. SIMON. Groethuysen, *Les problèmes actuel de l'instinct:* H. PIERON. Voss, *Grundriss der psychiatrischen Diagnostik nebst einem Anhang enthaltend die für den Psychiater wichtigsten Gezetzesbestimmungen und eine Übersicht der gebräuchlichsten Schlafnuttel:* J. RAECKE. Allers, *Das Krankheitsbild der überwertigen und die chronische Paranoia:* MAX LOEWY. Allers, *Über Hypochondrie und ihre Wurzeln:* MAX LOEWY. Voss, *Über umschriebene Defekte bei Idioten und Normalen:* M. REICHARDT. Moskiewicz, *Characterbildung:* TH. ELSENHAUS.

THE INTERNATIONAL JOURNAL OF ETHICS. July, 1909. *Moral Education: the Task of the Teacher* (pp. 399–418): J. S. MACKENZIE.– Direct moral instruction need not arouse contrary suggestion. Morals can be taught without appeal to supernatural sanctions. The religious aspiration latent in morality appeals only to mature minds and may be omitted from elementary moral instruction. The association of morals and religion through the idea of goodness may be instilled in the study of literature and history. *Moral Education: the Training of the Teacher* (pp. 419–426): MILLICENT MACKENZIE. – The demand for teachers specially trained to give direct moral instruction should be created by agitation. Such special training should be given by teachers's colleges in their regular curriculum and through extension courses. *Some Criticisms of the Nietzsche Revival* (pp. 427–442): HERBERT L. STEWART. – Nietzsche's preaching of the superman inconsistently assumes obligation: his assertion of the mercenary nature of a desire for immortality is unfounded: his supposed evolutionary basis of egoism is a mistake. *Problems of Marriage and Divorce* (pp. 443–465): ANNA GARLIN SPENCER. – Marriage is a free and private contract, but also a social arrangement, and the old social control should persist in forms suited to modern conditions. *Women as Citizens* (pp. 466–476): MARY GILLILAND HUSBAND. – Women can produce a noble race of citizens only as themselves citizens. Human, rather than mere physical, motherhood is the ideal. *The Right to Property* (pp. 477–487): FRANK SARGENT HOFFMAN. – The ground of property is labor, but the right is a state right; hence the state should own all natural sources of property and should control methods of acquisition,

use, and transfer of property. National revenues should be derived chiefly from inherited wealth. *The Ethical Element in Wit and Humor* (pp. 488–494): BRADLEY GILMAN. – This element is the conquest of an error—usually bolstered into pretentious strength by plausible surroundings—by the truth as established in the mind of the listener or spectator through past experience. *Book Reviews:* Munsterberg, *Philosophie der Werte:* G. E. MOORE. Frederic Harrison, *National and Social Problems:* MARY G. HUSBAND. Frederic Harrison, *Realities and Ideals:* MARY G. HUSBAND. Royce, *The Philosophy of Loyalty:* D. S. MUZZEY. A. C. Pigou. *The Problem of Theism:* DAVID PHILLIPS. McDougall, *Introduction to Social Psychology:* FRANK GRANGER. Russell Lowell Jones, *International Arbitration:* G. C. RANKIN. M. W. Keatinge, *Suggestion in Education:* C. BIRCHENOUGH.

Heck, W. H. Mental Discipline and Educational Values. New York: John Lane Co. 1909. Pp. 147. $1.00 *net.* Postage, $0.10.

James, William. *The Meaning of Truth: A Sequel to "Pragmatism."* London, Bombay, and Calcutta: Longmans, Green, & Co. 1909. Pp. xxi + 298. $1.25 *net.*

Rowe, Stuart H. *Habit-Formation and the Science of Teaching.* London, Bombay, and Calcutta: Longmans, Green, & Co. 1909. Pp. xvii + 308. $1.50 *net.*

Thomas, William I. *Source Book for Social Origins: Ethnological Materials, Psychological Standpoint, Classified and Annotated Bibliographies for the Interpretation of Savage Society.* Chicago: Chicago University Press. London: T. Fisher Unwin. 1909. Pp. xvi + 932. $4.77, *postpaid.*

NOTES AND NEWS

IN view of the present scepticism and disbelief in regard to the atomic theory of physical science, it is of interest to note the vigorous assertion by Professor Rutherford, in his recent presidential address before the Mathematical and Physical Section of the British Association for the Advancement of Science, that the atomic theory is not disproved or damaged by the possibility of breaking up the atom into more elementary units, but rather is upheld and confirmed by the discovery of the ions and electrons of the electric theory of matter. Professor Rutherford's statement is, in part, as follows. "There has been a tendency in some quarters to suppose that the development of physics in recent years has cast doubt on the validity of the atomic theory of matter. This view is quite erroneous, for it will be clear from the evidence already discussed that the recent discoveries have not only greatly strengthened the evidence in support of the theory, but have given an almost direct and convincing proof of its correctness. The chemical atom as a definite unit in the subdivision of matter is now fixed in an impregnable position in science. Leaving out of account considerations of etymology, the atom in chemistry has long been considered to refer only to the smallest unit of matter that enters

into ordinary chemical combination. There is no assumption made that the atom itself is indestructible and eternal, or that methods may not ultimately be found for its subdivision into still more elementary units. The advent of the electron has shown that the atom is not the unit of smallest mass of which we have cognizance, while the study of radioactive bodies has shown that the atoms of a few elements of high atomic weight are not permanently stable, but break up spontaneously with the appearance of new types of matter. These advances in knowledge do not in any way invalidate the position of the chemical atom, but rather indicate its great importance as a subdivision of matter whose properties should be exhaustively studied. . . . The idea that the atoms of the elements may be complex structures, made up either of lighter atoms, or of the atoms of some fundamental substance, has long been familiar to science. So far, no direct evidence has been obtained of the possibility of building up an atom of higher atomic weight from one of lower atomic weight, but in the case of the radioactive substances we have decisive and definite evidence that certain elements show the converse process of disintegration. It may be significant that this process has only been observed in the atoms of highest atomic weights, like those of uranium, thorium, and radium. With the exception possibly of potassium, there is no reliable evidence that a similar process takes place in other elements. The transformation of the atom of a radioactive substance appears to result from an atomic explosion of great intensity in which a part of the atom is expelled with great speed."

THE American Philosophical Association will hold its ninth annual meeting at Yale University, New Haven, Conn., on December 27, 28, and 29, 1909. Professor Frank Thilly, the Secretary of the Association, requests that members intending to take part in the program notify him at an early date of the titles of their papers, and send summaries of them, one copy to serve as a basis for discussion and another to be used for publication in the "Report of the Proceedings." Members are also requested to suggest topics for the general discussion.

THE Catholic Institute of Paris invites competition for the Hughes prize, on the following subject: "The laws of nature, their degree of certitude, and of contingency." Papers should reach the Secréteriat of the Catholic Institute, 74 rue de Vangirard, before March 1, 1911.

A MONUMENT has been erected to the memory of Gabriel Tarde at Sareat, his native town. The sons of M. Tarde have published, in connection with the event, a volume of extracts for which M. Bergson has written a preface.

ANNOUNCEMENT is made of the death, on September 17, of Dr. Max Heinze, professor in philosophy at the University of Leipzig. Professor Heinze is well known for his important publications on the history of philosophy.

THE following remark is taken from *The Evening Post* for Thursday, October 21: "Eskimos would seem to have a strong natural leaning towards pragmatism."